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Stormwater Management Plan Review Course

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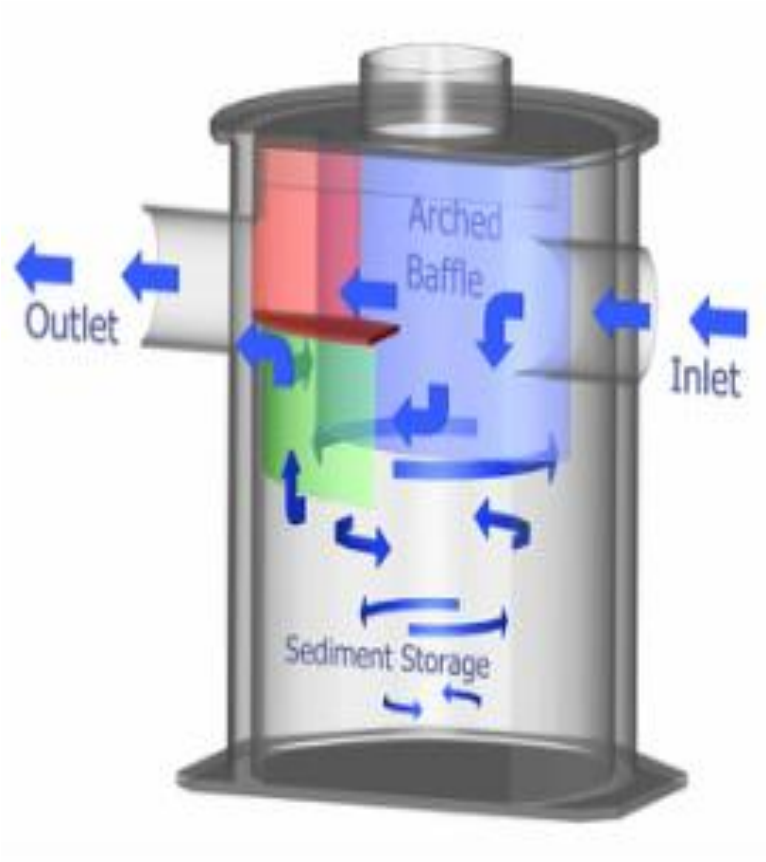
Manufactured Treatment Devices



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Manufactured Treatment Devices

- **Hydrodynamic Devices:**
  - settling or separation of pollutants
- **Filtration Devices:**
  - filtering chamber with synthetic media (e.g. zeolite, perlite, granular activated carbon)
- **High Flow Bio-Media devices:**
  - soil media mix (sands, low fines content)

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Hydrodynamic Devices

- Flow Based
- Removes large particle sizes
- Performance increases with low cfs (i.e. small drainage area)
- Excellent for pre-treatment
- Maintenance important to prevent re-suspension

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Filtering Devices

- Flow or volume based
- Design flow rates range 2-50 gpm/ft^2 of filter media
- Removes smaller particle sizes
- Performance increases with low cfs (i.e. small drainage area)
- Many different types of media and configurations
- Maintenance very important to prevent re-suspension

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Bio-Media Devices

- Sizing based on drainage area/surface area
- Removes smaller particle sizes
- Performance increases with low cfs
- High potential for bypass flows

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Removal Efficiencies

- Assignment of efficiencies based on review of performance reports
- Total Phosphorous (TP)
- Total Suspended Solids (TSS)
- Based on Event Mean Concentrations (EMC)
- No Runoff Reduction

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Testing Protocol	Parameter	% TSS Removal[1]	%TP Removal[1]
TARP*	TSS	< 50% ≥ 50% ≥ 80%	Up to 10% Up to 20% Up to 40%
TARP* TAPE** USGS etc.	TP	N/A	Up to 50%

* Technology Acceptance Reciprocity Partnership Protocol

** Technology Assessment Protocol – Ecology

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Reason for Cap on Removal Efficiency

- Small sample size
- Environmental variability
- Sampling variability
- Influent pollutant concentrations
- Influence of loading rate
- Influence of particle size
- Many different methods to calculate removal efficiencies

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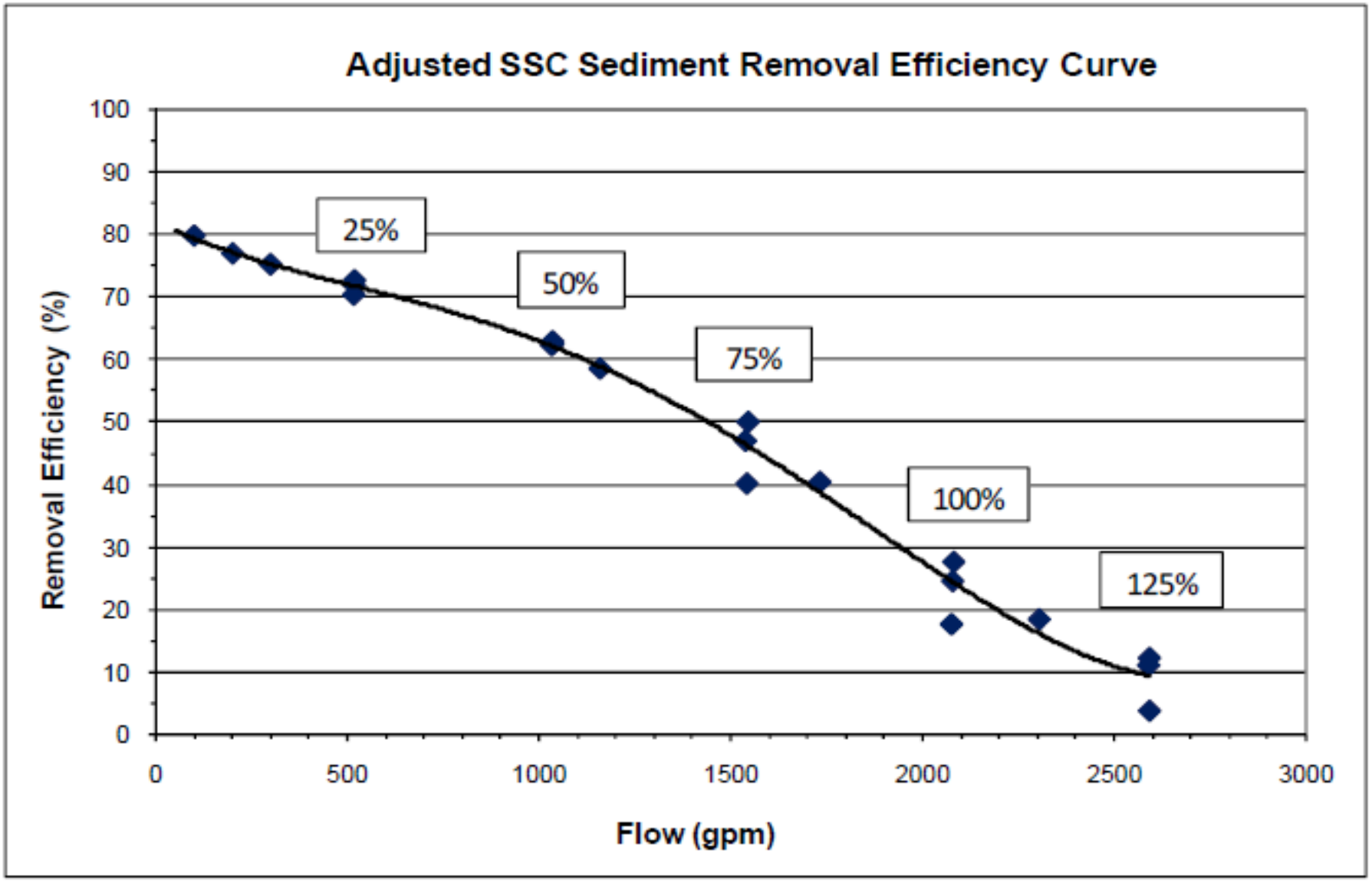
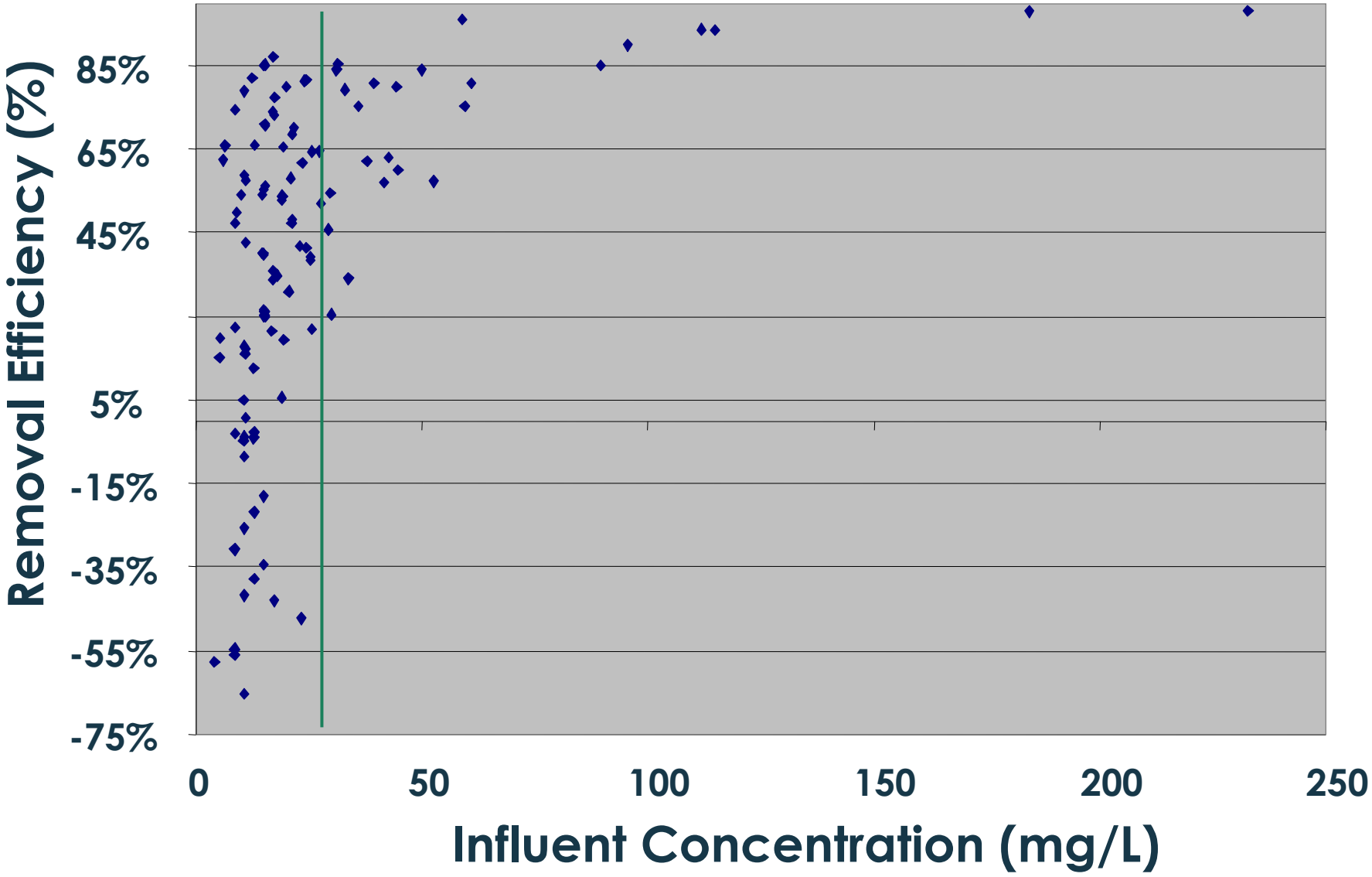


Manufactured Treatment Devices



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Manufactured Treatment Devices

- Ultra urban sites
- Space constraints
- Physical constraints
  - high groundwater table, poor soils, etc.
- Pre-treatment
- Re-development
- Off-line vs. On-line

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- Posted on VA Stormwater BMP Clearinghouse
- Runoff Reduction Spreadsheet
- Generic Placement type
- Input Credit Area and RE

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- How do design plans specify MTD?
- Drainage area size/flow
- Bypass
- Maintenance schedule
- Manufacture's website
- Other sources of information:
  - Washington Dept. of Ecology, Mass. Stormwater Clearinghouse, NJCAT, EPA, and International BMP Clearinghouse

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Questions?